



amateur radio

Vol. 34, No. 5

MAY

1966

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"AMATEUR RADIO"

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FEDERAL COMMENT

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THE I.T.U. FUND—SOME PLAIN SPEAKING

It is now seven years since we sent a representative to an International Telecommunications Conference, and it is now three years since an appeal was launched to raise finance so that we could be adequately represented at the next Conference. Today this I.T.U. fund is not half way to its target amount.

In order to explain to you the implications in these three facts, let me make the following comments (made in very plain language so that you will not have to spend time "trying to read between the lines").

(1) Why do we need to attend such I.T.U. Conferences? Several persons who have very experienced backgrounds in this have said that "they wonder how long the Amateur Service can hold out against the ever increasing pressure for frequency space by the expanding commercial services." In other words, your Amateur Bands could be taken from you or drastically reduced unless a united and high level defence against this action is made on your behalf at these Conferences. This applies to h.f. and v.h.f., and even u.h.f., bands alike. Make no mistake about this, it will affect all Amateurs and S.w.i's.

(2) Such representation is costly. At least \$7,000 was sought in 1963 for this purpose and it may well be that this estimate is too low on today's travelling costs.

(3) The F.E. balance sheet just presented at the Easter Convention shows a total of \$3,373 subscribed to date—not half way. Perhaps some Amateurs have not realised how serious this matter is and there are numerous new Amateurs who have heard little about it. What about it fellows? Remember any contribution is welcome and you do not have to be a member of the W.I.A. to contribute.

If you still need to be convinced that you should contribute, I would be pleased to send you reprints of several excellent and realistic articles written by very enlightened Amateurs, who keep their ears close to the ground, on the possible future of our hobby. They think it is very serious.

Don't you consider your hobby to be worth fighting for? Of course you do; so please make a tangible gesture in this regard so that it can be done on your behalf. Please send your contribution to your State Divisional Secretary—NOW!

K. CONNELLY, VK3ARD, Federal Treasurer, W.I.A.

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SIDEBAND TOPICS

SWAN

SW350 Mark III. basic Transceiver with u.s.b./l.s.b. sideband selection and 100 Kcs. crystal calibrator added, inclusive heavy duty 240v. a.c. supply/speaker unit in matching cabinet	\$600	£300
SW400 De Luxe Transceiver	550	275
SW410 matching all-band VFO	160	80
SW406 5-band VFO of 200 Kcs. each	100	50
VX-1 transistorised plug-in VOX operation unit	50	25
SW22 split-channel VFO adaptor	40	20

GALAXY

Galaxy V. Transceiver, u.s.b./l.s.b. selection standard feature, with plug-in crystal calibrator and heavy duty 240v. a.c. supply/speaker unit	\$600	£300
Galaxy External VFO, all-band coverage	100	50
Galaxy Vest Pocket size plug-in transistorised VOX unit	40	20

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Model 18AVQ vertical 5-band 10/15/20/40/80 Mx Ground Plane	70	35
Model TH3JR 3-element junior tri-band Yagi beam 10/15/20 Mx	98	48
Model TH6DX 6-element senior Yagi beam 10/15/20 Mx	200	100

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Model CDR TR-44 for average size beams	\$90	£45
Model CDR Ham-M for up to the largest beams in use	180	90
Alliance model U-98 for junior type beams	55	27½
(All rotators for 220/230v. with control unit)		
WEBSTER centre-loaded all-band mobile whip, adjustable to any frequency between 3.6 and 30 Mcs., the real DX-getter, with bumper- or body-mount assembly	\$48	£24
AZTEC 12v. d.c. power supplies, 300w. model	90	45
500w. model	110	55

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COLLINS KWM-2 Transceiver, with Collins PM-2 a.c. supply, Collins heavy duty 12v. d.c. supply and Collins mobile mounting unit	\$1000	£500
HEATH HW-22 single band 40 Mx Transceiver, has VOX control	170	85
HALLICRAFTERS HT-37 all-band phasing Transmitter	275	137½
HALLICRAFTERS HT-32 all-band filter Transmitter	320	160
HALLICRAFTERS SX-111 Amateur band a.m./c.w./s.s.b. Receiver	175	87½
SWAN SW350 Mark II. Transceiver, spotless, near new	420	210

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AMATEUR TELEVISION ACTIVITIES IN SOUTH AUSTRALIA

ANDREW PIERSON,* VK5ZBP/T

THE art of Amateur t.v. transmission and reception is not new to South Australia. Transmissions by Mait Lane, VK5AO/T, and George Usher, VK5ZEY/T, were conducted for several years before the loss of the 288 Mc. band necessitated the change to 432 Mc. The purpose of this article is twofold:

- (a) To inform Amateurs and interested parties of the progress made by a.t.v.
- (b) To initiate interstate correspondence from persons working on similar projects.

Unlike conventional Amateur Radio, where the station constructor is also the operator, Amateur T.v. requires a large "behind the scenes" crew. With these requirements providing a large draw on the manpower of the group, it is not surprising that we utilise only two channels of the u.h.f. t.v. band for transmission. These stations are VK5ZEY/T and VK5AO/T.

VK5ZEY/T is owned and operated by George Usher, who has an impressive array of equipment, which is housed in a separate building to his studio. His equipment consists of a 3" image orthicon studio camera with a multiple lens turret, and a camera mounted electronic viewfinder, all of which is mounted on a dolly-based tripod. This equipment is backed up by a 1" vidicon telecine chain. The vidicon camera is fed by a remotely operated mirror diplexer providing the following picture inputs: 35 mm. movie, 16 mm. movie, 35 mm. slide, and episcopes facilities for the A.t.v. clock and opagues.

All video is passed through the master control room, in which is situated the video mixing console, which also provides inputs for extra camera chains and outside broadcast facilities. The mixer has provision for trick effects, such as wiping, inlay, overlay, etc. The actual mixing operation is achieved with push button and a transverse quadrant fader. The sound mixing, when correctly programmed, is switched automatically with the video.

Master control is separated from the telecine room by a sound-proof wall in which is set a plateglass window. The studio proper is in another building, for which intercommunication and cueing facilities are provided. George has three interlaced sync. pulse generators; one operational, and the other two on standby.

The transmitter at VK5ZEY/T is a vestigial sideband type, employing low level signal shaping through a standard 30 Mc. t.v. i.f. strip. The signal is then frequency changed to the 432 Mc. band, and passed to a QQE03/20 linear amplifier running 20 watts input. Standard CCIR 5.5 Mc. intercarrier sound is injected into the low level system. The antenna is a 16 element collinear array up 100 feet.

VK5AO/T is Maitland Lane's station. Mait uses a 1" vidicon chain, a flying spot scanner, and transistorised electronic pattern and interlaced sync. generators. The video transmitter at VK5AO/T uses a QQE03/20 and high level grid modulation. The audio is fed to a separate transmitter, which is maintained 5.5 Mc. above the video carrier by means of a servo system. Audio r.f. output is from a QQE02/6 running 5 watts. Antennae, which are mounted 40 feet high, are a 16 element collinear array and a 5 element Yagi, for video and sound respectively.

just adequate, since a good t.v. signal suitable for re-transmission requires the equivalent of at least a 40 db. over 9 a.m. audio signal on a good narrow-band communications receiver.

The transistorised vidicon chain which is used in conjunction with the O.B. van was built by Alan Nation. The camera is equipped with a zoom lens, and an in-built viewfinder, utilising an electrostatic cathode ray tube. Alan also has trick mixing facilities which, being portable, can be used in the O.B. van. All his equipment may be operated from a 12 volt car battery.



George Usher (left) on I.O. camera and Alan Nation on vidicon camera during an outside broadcast.

Our outside broadcast van was built by John Ingham, VK5ZDZ/T. Inside, five viewing monitors are mounted above the control desk which houses the video and sound mixers. Three monitors are used on camera channels; one for incoming O.B.'s and the final monitor for an "on-air" picture.

Racks mounted in the van house the interlaced sync. pulse generator, 6 metre communication equipment, and the O.B. link transmitter. Facilities are provided for equipment maintenance in the field. The 16 element collinear array, on a 30 foot collapsible mast, is mounted on the side of the van, whereas, at the studio receiving end, a similar array 100 feet high is used. For normal a.m. sound communication, these antenna heights may seem to be excessive, but for t.v. they are only

STANDARDS

All equipment built by the South Australian Amateur Television Group complies with C.C.I.R. standards, thus ensuring uniformity of performance and simple interconnection.

Our standards are:

Sync., line drive, frame drive,

blanking —4v. across 75 ohms.

Video —1.4v. across 75 ohms.

Transmission:

Video—negative modulation, a.m.

Audio—3.5 Mc. intercarrier system
i.m. Audio carrier above the video carrier.

Video connectors:

Beiling-Lee connectors.

Sync. and drive connectors:

8-pin Jones connectors.

* Public Relations Officer, South Australian Amateur T.v. Group, 619 Seaview Rd., Grange.

Audio connectors:

Low level—balanced, Cannon connectors.

High level—balanced, double jacks; unbalanced, standard jacks and Beiling-Lee connectors.

Horizontal antenna polarisation is used, with 18 element arrays being the most popular. Standard t.v. receivers fitted with a converter, are used for reception. Two types of converter have been tried, nuvistor and transistor. There is not much to choose between the two as far as performance is concerned, but the transistor type is much better than its nuvistor counterpart.

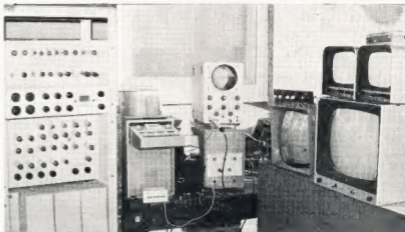
Several demonstration telecasts have been undertaken, the major telecast occurring annually during the Adelaide Royal Show in September. The programme continues for the eight days' duration of the show, and is believed to be the biggest Amateur television broadcast in Australia. There have been two broadcasts to date; one in 1964 and one in 1965, with yet another planned for this year. The receiver is placed in the Apprentices' building, on the Weapons Research Establishment stand. Our receiving antenna is a 16 element collinear array mounted atop the Centennial Hall, which is the main Show building. With such an arrangement, the path is well and truly line of sight, and with one watt transmitter power over half a mile, the received pictures are clear and strong. Because we have r.f. to spare, conventional 300 ohm feedline is used on the long run to the Apprentices' building, where a transistor converter feeds a standard t.v. receiver.

It is indeed fortunate that VK5ZEY/T's studios, from which our Show programme originates, are situated only a half mile from the Showgrounds. Very satisfactory pictures result, with a consistently high video bandwidth. Our programmes ranged from a discussion on frill-necked lizards, through audience participation shows (via 6 metres) and instant news spots, to outside broadcasts of a football match and scale electric car racing.

As the I.O. camera was required at the studios, two vidicon chains were used for the outside broadcasts. At the studio, the incoming signal is previewed on a separate receiver, so that the necessary adjustments can be made to the signal and antenna alignment. The signal is then fed to a monitor, which is driven from the station's sync. pulse generator. The incoming picture is slaved in, line by line until the frame pulses coincide. The master sync. generator is then locked to the incoming O.B. sync., and the studio is, in effect, then running from the sync. generator of the O.B. van, even though the O.B. programme is not on air. The studio picture can, at any time, be replaced by the O.B. picture with the push of a button on the video mixer panel.

During the shows, the production staff operated at their peak, keeping the programme, both quality and continuity wise, to a very high standard. The success of the show was primarily due to our programme co-comperes Norm Robb and John Twining, and also to the host of performers who, by providing a satisfying, balanced programme, enabled us to demonstrate the full capabilities of the system.

The future looks bright for Amateur Television. Telecasts of the Sunday morning W.I.A. Notes are envisaged, and even now programme details are being arranged for our 1966 Royal Show programme, which promises to be better than ever. We would like to hear of Amateur Television activities in your State. Would you write an article?



Portion of camera control equipment during a public demonstration telecast. The video switcher is situated in the O.B. van. Equipment is, from left to right: I.O. control rack, vidicon 1 control unit, vidicon 2 control unit, monitoring c.r.o.'s, picture preview monitors. In all, 17 monitors were used.

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JOHN J. SCHULTZ, W2EY/DJOBV



The multipurpose adaptor is shown here next to the NCX-3.

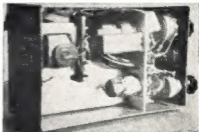
CRYSTAL CALIBRATOR

The 100-Kc. calibration oscillator is adapted from the "ARRL Handbook." L2 is broadly resonant in the 14-Mc. range. I used this circuit, instead of the conventional one-stage arrangement, because, after trying most of the one-stage circuits, I have never been satisfied with the output above 14 Mc. It has always been difficult to find the 100-Kc. markers on 10 metres, unless the antenna is disconnected. The NCX-3 does not cover bands higher than 14 Mc., of course, but, since I wanted to make the adaptor suitable for use with other equipment covering the higher-frequency bands, I decided to incorporate a calibration oscillator that could be easily heard. R4 is used to reduce the output on 80 and 40 if necessary.

SIDE-TONE OSCILLATOR

The c.w. side-tone oscillator is conventional. It produces a tone of about 800 cycles with the values shown. The tone can be varied by changing the value of the capacitor across the output transformer primary; probably some experimenting with the value of this capacitor will be necessary anyway, depending on the transformer used. R3 serves mainly as a volume control, although it does vary the tone slightly. The blocking-bias connections in a grid-block-keyed transceiver can be made at the key terminals directly, or internally in the transceiver. The loud-speaker connections may also be made directly to the station loud speaker, or a small 2- or 3-inch loud speaker might be included in the out-board unit. Note that only one section of the 12AU7 dual triode is used and also only one side of the heater (to

(Continued on Page 10)



T1 is in the upper left-hand corner, above the i.f. can which houses the audio filter. Across the top of the partition are the 100-Kc. crystal, the 6AN8A, and the 12AU7A (biased in this view). The tube below the crystal is the 6AL5.

conventional full-wave shunt limiter, with the clipping level set by potentiometer R1. The effectiveness of such a limiter on s.s.b., as compared to a Bishop-type i.f. noise limiter, is debatable but, in this case, the main purpose of the limiter is to remove the strong clicks caused by switching lights and appliances, which are usually bothersome in home-station operation. This is accomplished easily enough by audio limiting. Also, no work has to be done on an i.f. circuit as would be required for the Bishop limiter. The audio line between the product detector and the first audio stage in the transceiver is the only connection that has to be brought out.

AUDIO FILTER

The shunt limiter is followed by an audio filter for c.w. The filter shown in the schematic is a simple, single, parallel-tuned circuit using a high-Q inductor, such as the UTC type MQA, and tuned to about 800 cycles. However, any other desired audio filter, such as the OCO multisection filter* (minus the input transformer and transistor amplifiers), may be used, depending on how elaborate you want to make the unit. In any case, c.w. will be much more of a pleasure to copy than with the 2- to 3-Kc. s.s.b. bandwidth of the transceiver. R2 is used for coarse adjustment of the selectivity of the filter. It is not absolutely necessary, but is useful in relieving the ring of a sharp filter when conditions do not warrant maximum selectivity.

*Gensler, "The OCO Audio Filter," "QST," January, 1962.

MOST transceivers on the market today are designed primarily for mobile operation. In an effort to keep the size to a minimum, some of the features found desirable in home-station use are often sacrificed—particularly those special qualities needed for present-day c.w. work. After a few hours of operation, the corners that have been cut become evident, and one begins to think of a number of accessories that could be added to enhance the performance in fixed station operation.

In connection with my NCX-3, I felt it desirable to limit revisions to those possible with only the simplest of alterations in the original wiring. Nevertheless, it turned out that several attractive features could be provided within this restriction:

- (1) Audio-type noise limiter.
- (2) Audio filter for c.w. selectivity.
- (3) Side-tone oscillator for c.w. monitoring.
- (4) 100-Kc. crystal calibrator.

All of these functions are provided by an adaptor unit which plugs into the accessory socket, after a few very simple changes in original wiring have been made. None of these changes in any way affects the original operation of the transceiver. Since most of the modifications are applied to the audio section, they can be adapted quite easily to transceivers other than the NCX-3.

NOISE LIMITER

Fig. 1 shows the schematic of the adaptor unit. The 6AL5 serves as a

*Reprinted from "QST," January, 1962.

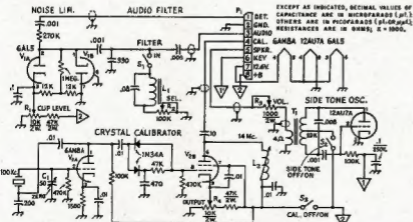


Fig. 1.—Circuit of the NCX-3 adaptor. Fixed capacitors of decimal value are paper, mylar, or disc ceramic; others are mica. Fixed resistors are 1/4 watt.

C1—Air trimmer.
L1—0.5-henry high-Q inductor (UTC MQA-10).
L2—3-10-μh. slug-tuned coil (Miller 4406, or similar).
P1—Octal plug.

R1, R2, R3, R4—Linear control.
S1, S2, S3—S.p.s.t. toggle switch.
T1—Output trans., 10,000 ohms, plate-to-plate, to 4 ohms.

6'60 SPECIAL*

An All-Mode Transmitter for 6

JOHN S. RAYDO, KOLMZ

THE transmitter described in this article was built to satisfy the need for a flexible rig of moderate power for the 6-metre band. It features a built-in high-stability v.f.o., broadband exciter, high-level plate modulation, mixed keying for c.w., and with the addition of a 20-metre s.s.b. signal, is a s.s.b. transmitting converter. All parts, with few exceptions, are standard and may be purchased from most large distributors.

RFCS is provided to short out the d.c. voltage that would appear on the output circuit if C13 should break down. The choke in the plate load, Z1, is for parasitic suppression. Note that each of the three cathode leads is bypassed separately at the socket and that the screen is bypassed directly to the cathode, rather than to ground.

The modulator section, used only for a.m., has a 12AX7 driving a pair of 6BQ6GTB tubes operating Class AB2.

R2 permits setting the 6146 to Class AB2 for s.s.b. operation. On a.m. and c.w. the fixed bias is high enough to limit plate current to a safe value and when grid current flows, the voltage drop across the resistance from the arm of R2 to ground will shift the final amplifier into Class C operation. The ground side of controls R2 and R3 is transferred by the function switch, S2C, and the control relay. If the line is not grounded in the "operate" position, with the push-to-talk mike switch open, the full 120-volt bias cuts off tubes V2A, V3, V4, V6 and V7. If a relatively low resistance, R1, is connected in the line, these tubes are almost cut off, and a low-level spot signal results. Relatively few contacts are needed on the function switch with this method of control and the relay switches less than 7 mA. at 140 volts. R1 may be replaced by a panel-mounted 25K control if variable spotting injection is desired.

CONSTRUCTION

The unit is built on a 14 x 10 x 3-inch chassis with a 15 x 6½ x 0.0900-inch panel, and fits into a handmade cabinet. Other types of cabinets (such as the standard rack styles) may be used. All sockets, terminal strips and other parts are securely mounted with shake-proof washers under the mounting nuts. A neat-looking unit can be obtained by dressing the leads and components in parallel lines or at right angles. D.c. and a.c. leads can be trucked out of the way along the edges of the chassis, while r.f. leads should be as direct as possible. The wiring can be harnessed to add to the eye appeal of the unit. Avoid the use of stranded wire when assembling the circuit. Where this wire must be used, be careful to avoid wild

* Peck, "Home-Brew Custom Designing," "QST," April, 1961.

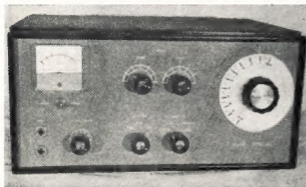


Fig. 1.—Front view of the 6-60 Special, showing layout of the panel.

CIRCUIT DETAILS

The built-in v.f.o. is used for a.m. and c.w. operation. The oscillator uses the familiar Colpitts circuit, operating between 14 and 15 Mc., with the plate circuit tuned to 14.5 Mc. The tube socket and tuning capacitor are ceramic-insulated. Long leads and unnecessary stray capacitance are avoided. The oscillator coil is solidly mounted to prevent vibration.

The output from the v.f.o. is injected into the grid of the mixer along with 36-Mc. energy from an overtone oscillator, V2B. On a.m. and c.w. the mixer selects the sum of these two signals in a high-L/C plate circuit tuned to 50.5 Mc. This heterodyne method of obtaining 60-Mc. signal results in higher 6-metre stability with a v.f.o. If the transmitter is used as an s.s.b. converter, the v.f.o. is disabled and in its place, 20-metre s.s.b. of low level is injected into the mixer cathode.

The 50-Mc. energy is amplified by the 12BY7 buffer, V3. The output circuit of this stage is a broad-band coupler. This coupler provides near-optimum coupling efficiency, yet has sufficient bandwidth to permit operation across the first megacycle or so, without retuning the exciter.

The 6146 amplifier stage has a shunt-fed pi-network plate circuit. For best stability the stage is neutralized. Choke

The power supply uses a choke-input filter and silicon rectifiers in a bridge circuit. A high voltage of about 375 volts and a low voltage of about 275 volts are produced under load. A small filament transformer, reverse connected and hooked to the filament line, provides fixed bias. Practically all control of the transmitter, except for an external antenna relay, is performed by the bias network.

Fig. 2.—Top view of the chassis, showing placement of tubes and other components.



* Reprinted from "QST," January, 1960.

strands that stray over to an adjacent terminal and result in a short circuit. The location of most of the major components can be seen by referring to the photographs.² The plate circuit of the 6146 is shielded by a 3½" deep x 4½" wide x 3½" high U-shaped bracket. This shield is attached to the chassis with three grade bolts. Below the chassis, the grid circuit of the 6146, and the 12BY7 plate circuit, are enclosed by a similar 3½ x 5 x 2½-inch bracket. This shield is notched where it passes over the 12BY7 socket.

² The author will supply full-scale templates of the chassis and panel at a cost of \$4.

The type of socket used for the final-amplifier tube is important. Do not use the common moulded socket with an elevated grounding ring having 4 lugs spaced around its circumference. Grounding should be done to lugs placed under the nuts used for mounting the socket. It is imperative that the bypass capacitor connections be made with virtually no leads at all, in the buffer and final-amplifier stages. The 6BQ6 modulator tubes are sub-mounted in the chassis with one-inch spacers. The newer 6BQ6GTB tubes must be used if the height of the transmitter is to remain at 6½ inches. The vernier

drive for the v.f.o. capacitor is a Jackson 4511/DAF with a 6:1 ratio,³ mounted behind the front panel so that the v.f.o. dial clears the panel by about 1/16-inch. The dial is a 4-inch disc of ¼-inch translucent plastic, calibrated with a Datsak lettering set.⁴ Several light coats of clear plastic spray will prevent the markings from rubbing off. Illumination may be added by cutting a small fan-shaped window in the panel behind the dial. A small bulb assembly will

³ Arrow Electronics, Inc., 806 Broad Hollow Road, Farmingdale, N.Y.

⁴ The Datsak Corp., Dept. 6111-2, 63 71st St., Guttenberg, N.J.

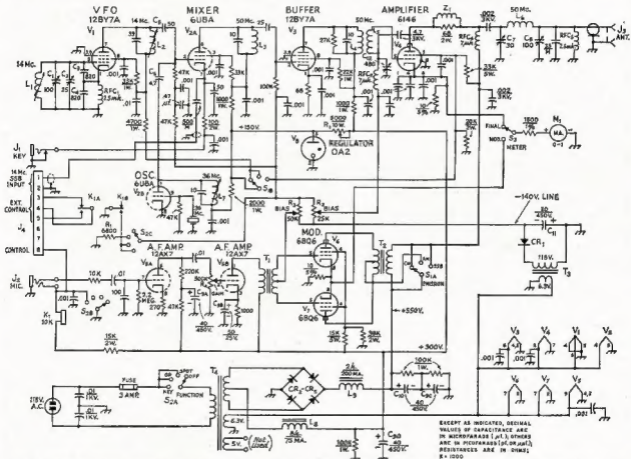


Fig. 2—Schematic diagram of the 8/90 Special.

M is Mils. Polarized capacitors are electrolytic type. Resistors are ½-watt composition unless otherwise noted.

- C1—100-pf. variable (Bud 1855).
- C2—25-pf. trimmer (Hammarlund APC-25).
- C3—C1—320-pf. silver mica.
- C4—50-pf. silver mica of NPO disc.
- C5—4.7-pf. silver mica of NPO disc.
- C6—30-pf. variable (Hammarlund HF-30-X).
- C7—100-pf. variable (Hammarlund HF-100).
- C8—40-400 pF. at 450 volts, 50 pF. at 25 volts, can-type electrolytic (Cornell-Dubilier Electronics D08B82).
- C9—40 pF. at 450 volts, tubular electrolytic (Cornell-Dubilier Electronics BR 40-450).
- C10—40 pF. at 450 volts, tubular electrolytic (Cornell-Dubilier Electronics BR 40-450).
- C11—30 pF. at 450 volts, tubular electrolytic (Cornell-Dubilier Electronics BR 40-450).
- C12—80-400 pF. mica trimmer.
- C13—400 p.l.v., 500-mA. silicon diode.
- C14—CR1-CR2, 500 p.l.v., 500-mA. silicon diodes.
- J1—¼-inch 3-conductor shorting jack (Switchcraft 12A).
- J2—¼-inch 3-conductor jack (Switchcraft 12B).
- J3—Co-axial chassis fitting (SO-238).
- J4—Octal socket.

- K1—D.P.D.T. plate relay, 15,000-ohm coil (Pottier and Brumfield KCP11).
- L1—4 turns No. 16, ¼ inch long, on ¼-inch diam. iron slug form (North Hills 1300C).
- L2—15 turns No. 20, close-wound, on ¼-inch diam. iron slug form (Miller 21A000RB1).
- L3—8 turns No. 16, air-wound, ½-inch diam., 1 inch long.
- L4—8 turns No. 18, air-wound, ½ inch diam., ½-inch long.
- L5—¾ inch long No. 16, air-wound, ½-inch diam., ½ inch long.
- L6—8 turns No. 18, air-wound, ½-inch diam., ½ inch long.
- L7—6 turns No. 22, ½ inch long, on ¼-inch diam. iron slug form (Miller 21A000RB1).
- L8—by 75-mA. filter choke (Stancor C1385).
- L9—by 200-mA. filter choke (McGee Radio 2H-400 or C280-45).
- M1—0-100-ohm, multi-tap, calibrated 0-150 mA. (Lafayette 99G2514).
- R1—5000 ohm, 10-watt resistor (adjustable).

- R2—25-500 ohm, 3-watt potentiometer, screwdriver adjustable (Ohmite CLU2531).
- R3—35-500 ohm potentiometer screwdriver adjustable (Ohmite CLU2531).
- R4—6.5 megohm control, audio taper (IRC-Q13-131).
- RF1, RF2—3.5-mh. r.f. choke (National R50).
- RF3, RF4—7-mh. r.f. choke (Ohmite Z-50).
- S1—3-pole 3-position section phenolic rotary switch (Centralab PA-1007).
- S2—3-pole 4-position 2 section ceramic rotary switch (Centralab PA-1012).
- S3—3-p.d.t. toggle switch.
- T1—1-3 interstage transformer (Stancor A-53-C).
- T2—25-watt modulation transformer (Stancor A-3045). Use 0005-ohm tap on secondary.
- T3—F1, trans. 0.3-volt 1.2 amp. (Stancor F-6134).
- T4—Power transformer: 500 v. ct., 250 mA.; 6.3 v. 8 amp.; 5 v., 3 amp. (not used). (McGee Radio 98101-1).
- Z1—3 turns No. 18, ½ inch long, wound on 88-ohm 2-watt resistor.



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10	" "	" "	" "
7	" "	" "	" "
5	" "	" "	" "
4	" "	" "	" "
3	" "	7.6	x 4.9
2	" "	" "	" "
1.5	" "	6.6	x 4.1
1.0	" "	" "	" "
.7	" "	6.1	x 3.6
.5	" "	" "	" "
.4	" "	" "	" "
.3	" "	" "	" "
.2	" "	3	" "
.15	" "	" "	" "
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softly illuminate the dial near the pointer. A 0-1-mA. clear plastic meter, calibrated 0-150 mA., is used to measure the cathode current for both the final amplifier and modulator. Originally an S meter, this unit was chosen because it could be illuminated. The original scale was removed by rubbing with a household cleaner and re-calibrated with a Datak meter-marking kit. Other 0-1 mA. meters may be used in place of the one specified.

Special care should be taken in all phases of construction, especially with external details such as the front panel. This particular unit received a coat of primer and three coats of blue ham-mertone paint. After the decals were applied, a final coat of clear plastic was added. The use of black knobs, and a cabinet of contrasting black accentuates the panel. The meter is complemented by the v.f.o. dial, yet no monotonously perfect symmetry is evident. It seems strange that so much home-brewed equipment is so well engineered and yet so little time is spent trying to make it look like a commercial rig. The payoff is in greater satisfaction and the excellent possibility of selling the rig later on, at a profit.

ADJUSTMENT PROCEDURE

Initial check out and alignment are conducted as follows: Remove the 6146 and 6BQ6 tubes from their sockets. All other tubes should be left in place. Turn the emission switch to c.w. and the function switch to "key." All tubes should light, and power-supply voltages should be close to 300, 700, and -150 volts under light load. Adjust the v.f.o. coil, L1, and trimmer C2 to cover 14 to 15 Mc., while listening on a receiver to the fundamental or a harmonic. Peak the plate coil, L2, at 14.5 Mc. Adjust L7, the overtone oscillator coil, until the crystal oscillates cleanly at 36 Mc. Adjust L3 in the mixer plate circuit by squeezing or spreading the turns until it peaks at 50.5 Mc.

Turn the transmitter to the "off" position. Plug the 6146 and 6BQ6 tubes into their sockets. Temporarily connect a shorting wire across L6, in the bandpass coupler. Tune L4 to 50.5 Mc. in a similar manner to L3. The two coils should be separated by about $\frac{1}{2}$ inch. Remove the shorting wire after adjustment is complete.

The next step is to neutralise the 6146 amplifier. Open the heater circuit to the 6146 stage during this process. Turn the emission switch to c.w. and the function to "key." Peak the output pi network for maximum output, using a sensitive wavemeter coupled to L6. Neutralise the 6146 by adjusting C12 for minimum feed-through. Be sure to resonate the plate circuit after each adjustment of C12, and take suitable precautions with the high voltage present in the plate circuit.

After neutralisation is complete, plug an open-circuited key into the c.w. jack, and switch the emission mode to s.s.b. Adjust the final-amplifier bias control, R2, for 15 mA. final plate current. Turn the emission switch to a.m. and the function switch to "operate," and adjust the modulator bias control, R3, for 25-mA. modulator current. Switch the meter back to read final

plate current. Connect a dummy load to the unit. Remove the key and close the mike push-to-talk switch. Dip and load the final to 110 mA. Switch the meter to read modulator plate current and adjust the mike gain until the meter kicks up to about 80 mA. on voice peaks. A check with a scope will indicate more precisely the point of 100 per cent. modulation. When the push-to-talk switch is released, both the final and modulator plate currents should fall to zero. Resting plate current for the

signal is of excessive strength, increase the value of R1, and conversely, if insufficient signal is present, reduce R1.

The transmitter has been in operation for several months now and has given me no trouble. It seems to "get out" well and numerous stations have commented on its excellent operation in all modes. The advantages of high-level modulated a.m., s.s.b., break-in c.w. and a high-stability v.f.o., make this a useful rig. Build one and I'm sure you'll agree!

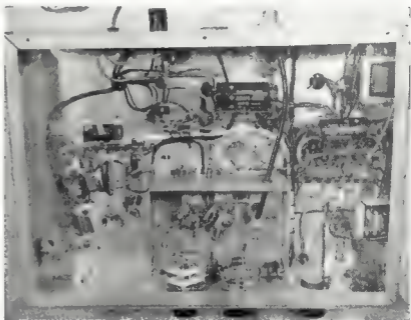


Fig. 4.—Under-chassis view of the unit, showing placement of shield compartment and various components.

final, when in the c.w. mode and key open, should be close to 15 mA. "Key" function is the tune position for all modes and is the c.w. position. "Operate" function is the push-to-talk position for a.m., the external control position for s.s.b. and the c.w. standby position.

To check s.s.b. converter operation, switch the emission to s.s.b. and the function to "key." The final amplifier should draw 15 mA. of plate current and the a.m. modulator should draw no current. Inject about 3 watts of 20-mc. s.s.b. signal into Pins 1 and 2 of J4. The final amplifier should kick up to about 70 mA. on voice peaks, for an input of about 85 watts p.e.p. If you have a surplus of drive, add an attenuation pad between the s.s.b. exciter and the transmitter.* The s.s.b. exciter will control the transmitter if Pin 8 of J4 is grounded on "transmit" through an extra contact on the s.s.b. exciter relay. An antenna relay may be controlled through Pins 3, 4, and 5. To check the spotting level, switch the function to "spot." A moderate signal should be heard in the 6-meter receiver. If the

*Hubbell, "A Step-Type R.F. Attenuator," "QST," December, 1956.

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An Indoor Pylon Slot Aerial for 145 Mc.*

WING COMMANDER A. P. MORGAN, D.F.C., R.A.F. (Ret.), G8DV

RECENTLY a requirement arose for an aerial to test some newly-constructed 2 mx equipment in a temporary location. The aerial had to be indoors, omnidirectional (to avoid the complications of rotation), cheap and simple to construct. The design adopted proved unexpectedly successful and it is thought that it may be of interest to others.

The writer is convinced that success with indoor aerials depends upon using flatly tuned designs with moderately wide band characteristics, e.g. folded dipoles, cages or cones. Past experience has been that such sharply tuned aerials as Yagis, W8JK's or inductively loaded designs are disastrously affected by the proximity of water pipes and rafters.

The design adopted is based on some notes in the "Pylon slot" which appeared in "Mobile Column" for February, 1963. It consists of a 10 in. diameter metal cylinder, 60 in. in length with a 1 in. slot in the side, short-circuited at each end. This resonates just above the 2 mx band and is brought to precise resonance by loading with a small capacity connected across the centre of the slot. By making the cylinder slightly longer, the natural resonance could be brought down to the 2 mx band and the loading capacitor dispensed with. The present arrangement, however, provides a convenient means of adjustment to compensate for possible slight variations due to materials or construction.

The aerial is fed by 72 ohm semi-rigid spaced co-axial cable through a 4:1 balun (see "RSGB Handbook," page 396). The feed point is about 14 in. from the lower end of the slot and the feeder, with balun tied to it, is run

through the centre of the cylinder. The balun section is 35 in. long (27½ in. if solid dielectric cable is used, although 26 in. may be more suitable with some solid dielectric types).

CONSTRUCTION

The cylinder is made from perforated zinc sheet. Locally available supplies come in 36 in. wide rolls of which two 35 in. lengths are required. These are spot soldered together, side to side, with an 8 in. overlap. The edges of the resulting large sheet are reinforced by folding to a width of 2 in. and spot soldering. The final size of the sheet is 60 in. by 31 in. This is then bent to cylindrical shape, leaving a 1 in. slot in the periphery which is bridged, top and bottom, with 1 in. wide strips of sheet copper (or tinplate) soldered into place. Each end of the cylinder is braced with a length of ½ in. diameter aluminium tube, flattened at the ends, bent at right angles for ½ in. at each end and bolted to the cylinder walls across the diameter. A small 5 pF. ceramic trimmer is soldered across the exact centre of the slot. The finished product is not robust, but this is not important as it is for indoor use.

TUNING

The aerial is most conveniently tuned with the aid of a standing wave indicator (e.g. "R.S.G.B. Handbook," page 482). The aerial is temporarily suspended in the operating room, or stood on a chair or table. (The ends of the cylinder are at zero r.f. potential so that no high grade insulation is necessary.) The balun is attached to the slot in temporary fashion at the approximate position given above. Power at a level suitable to the s.w.r. bridge is fed to the aerial and the trimming capacitor adjusted for minimum s.w.r. The tapping point is then slightly adjusted and the capacitor reset for minimum s.w.r. The process is repeated until minimum s.w.r. is achieved. An s.w.r. of 1-2:1 is adequate. The balun may then be permanently connected and the aerial transferred to the attic; the change of environment should have little effect on s.w.r.

PERFORMANCE

In the limited time available to try out this aerial, its performance exceeded expectations. It radiates with horizontal polarisation and the pattern appears to be substantially omnidirectional with some gain due to vertical directivity. Although no direct comparisons have been possible, the performance appeared to be better than that of a four-element indoor Yagi formerly in use although in all fairness it must be admitted that the Yagi was much affected by nearby objects. From an average location in the loft of a typical suburban London house contacts were made with F (Brittany), ON, PA, GC, GW, during an opening and a num-

ber of more local stations in various directions using n.b.f.m. or c.w.

The cost of the perforated zinc was about 22/6; construction and alignment occupied a single wet Saturday afternoon and evening. While its performance cannot compare with that of a good outdoor beam, this aerial may be of interest to those v.h.f. aspirants suffering under a "no outside aerials" restriction or to "handraucic" beam owners who like to enjoy net working without manual labour.



The pylon aerial mounted in the attic at G8DV.

★

CONTEST CALENDAR

- 1th/8th May: U.S.S.R. DX Contest (c.w. only on 3.5 through 28 Mcs.).
- 18th May: N.Z.A.R.T. Sangster Shield (8.5 Mca. only).
- 4th/8th June: CRC/FHC/HTH QSO Party.
- 9th/10th July: R.S.G.B. 1.5 Mca. "Summer" Contest.
- August: Remembrance Day Contest.
- 30th/31st September: R.S.G.B. 21/28 Mca. Phone Contest.
- 1st/2nd October: VK/ZL/Oceania DX Contest (Phone section).
- 8th/9th October: VK/ZL/Oceania DX Contest (c.w. section).

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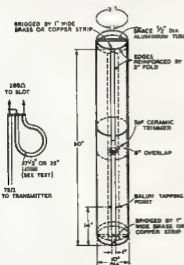
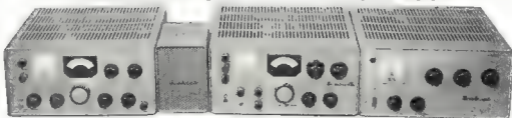


Fig. 1.—Construction of the aerial and the balun.

* Reprinted from "R.S.G.B. Bulletin," December, 1962.

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SIDE BAND

Sub-Editor: PHIL WILLIAMS, VIKON

LINEAR AMPLIFIERS—continued.

Our April Sideband notes have dealt with the class "A" stage of the transmitter, which usually follows the last mixer which puts the signal on the final frequency. Now, the next stage to be described is the Class AB1 amplifier which lifts the signal from a "high-impedance" voltage signal at the grid, to give an r.f. power output of 50 to 100 watts, with minimum distortion.

During the past few months I have had many questions from Amateurs who have been active on a.m. and c.w. for many years and are thoroughly conversant with the operation and adjustment of Class C amplifiers of the 807 and 813 variety. It is to this group that the notes are addressed this month, as there is a need to re-orientate the thinking on amplifiers, to change over to linear operation. Such topics as plate supplies, screen supplies, bias supplies, muting, neutralisation, drive, loading, and tuning need to have their differences between the Class C and Class AB1 conditions emphasised.

If you have been brought up on s.s.b. you may drop off to sleep or turn to another page. Starting from the beginning, the first decision to be made is to choose the type of output tube required in your exciter. A good choice for British, Australian and New Zealand licensing conditions is the pair of 807's in parallel, single 6146, 6DQ6, 6DQ5, 829B (two sections in parallel), or tubes of similar rating. The important parameters to be considered, and here the valve data sheets and tables in the back of the A.R.R.L. Handbook should be consulted, are the input, output and plate-grid capacitances, and the relative voltages and bias voltages for the elements. All of the examples mentioned above will give outputs of 40-50 watts without strain, under class AB1 conditions, i.e. with no grid current. They will operate at plate voltages of about 800-850 volts. The 807s require 300 volts on the screens and about -30 volts of fixed bias, the 829B being similar but voltages are usually reduced to about two-thirds of the above, viz. 500, 200 and -22 volts of bias to avoid over-heating the envelope and gassing problems to which these valves are prone. Most television tetrodes of the 6DQ6 type require only 150 volts on the screen, but about 50 volts of grid drive. The popular 6146 may be run at 205 volts on the screen and -45 to 50 volts of bias. Most American exciters use about double the exciter power above but this is because they have to drive the 2 kw. p.e.p. linear amplifiers which they are permitted to use.

When a linear for British licensing conditions is used, viz. one giving 400 w. p.e.p. output (corresponding to approx. 600 w. peak input power) then less

drive is required. By way of comparison the present a.m. plate modulated final operating at 66% efficiency, gives 400 w. p.e.p. output, i.e. on modulation peaks, so this is the reason for the British ratings.

Since peak emission from the tube's cathode is the important characteristic for determining the loading and peak output from a class AB1 amplifier, the plate current/voltage curves have been drawn in Fig. 1 for the limiting conditions only, to avoid cluttering up the graph. The 6146 (1) and 807 (2) have been drawn, as these are popular, and the difference in peak emission is quite

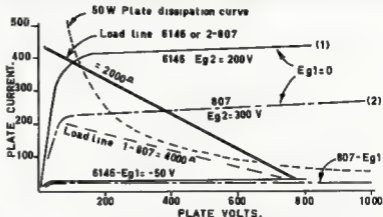


Fig. 1.—Plate current curves for Class AB1 operation.

obvious. Operating conditions for screen and grid voltages are shown on the curves. You will notice that the peak emission of 2 x 807's is just a little more than a single 6146, and the load line necessary for both of these can be considered to be about the same for the purpose of the exercise.

The 2000 ohm load line shown in the curve has to be doubled when calculating the output tuned circuit constants, as the tuned circuit only loads the plate of the tube for about half of the time. Designs for pi-network plate circuits are given in all recent copies of the A.R.R.L. Handbook for the usual loaded Q of 12. It is necessary to simply consult the curves to obtain the plate tuning capacitance, inductance, and loading capacitance for 50 ohm or 75 ohm output, whichever you use. The valves are given in tabular form in the Radio Handbook, 15th edition, page 267—Table 1—"Components for Pi Coupled Final Amplifiers."

The point to be noted on the higher frequency bands, is that the minimum C possible with the plate capacitance and the tuning condenser right out of mesh is usually greater than that required. It is usual to design for up to

double the circuit Q, i.e. about 20 for the 10 metre band and about 15 for the 15 metre band. More circulating current in the inductance of these higher Qs requires that they be wound of heavy copper wire, preferably silver plated, for minimum losses, and that the coil switch should be first grade as far as contacts are concerned. The 10 and 15 m. coil sections are, therefore, usually heavier and perpendicular to the other coil sections so that they will not be closely coupled to the other shorted coil sections. Checking some commercial pi-network coils (not of local origin) on a Q meter produced surprising results with unloaded Qs of 70 or 80 on some bands, instead of 200 to 300 as would be expected, and the remedy was quite simple, viz. separating the sections of the coil, which is progressively shorted, by about a quarter of an inch, instead of tapping a continuous winding of 16 turns per inch.

Use of an r.f. choke to supply the plate with d.c. appears to be standard practice now, so the plate tuning condenser does not need to have more

than .030 inches plate spacing. An old-style broadcast gang will do for 80, 40, and 20 metres, but its minimum capacitance and bakelite insulation (usually) are limiting factors for the higher bands, so it is a good idea to look for something with insulating end plates or, if metal, having most of the metal removed and spaced well away from the fixed plates. Ceramic or mica insulation is preferable, and a good system of rotor grounding must be provided. There are many suitable capacitors about — ex-World War II gear, but it pays to pick them up when you see them and "salt" one away for the project. If you have some you are not using of about 200 pF. max., 12 pF. min., then some other sideband constructor may be glad to get it. If you want to see the sort of thing recommended here, have a look in somebody's Swan or Galaxy transceiver, and the requirement will be clearer.

The A.W.A. tuning condensers ex the AT5 are more generously spaced than you require for the exciter output tuning condenser, so this type is better reserved for perhaps a linear using higher voltage, or the aerial coupling unit in

(Continued on Page 17)

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PROJECT AUSTRALIS

One of the major decisions to come out of the Federal Convention at Easter is to sponsor an Australian satellite carrying Amateur Radio.

The developmental work and construction of this equipment has been undertaken by the Melbourne University Radio Club and the Melbourne University Astronomical Society.

Preliminary tests have been made by means of balloon launchings and results so far have been highly satisfactory.

If the necessary finance is forthcoming in the next few weeks it will be possible to have the satellite launched towards the end of 1966.

Although all Divisions have signified their willingness to make a financial contribution, the cost of this project is such that assistance from individuals interested in this project would be more than welcome.

Full details of the satellite will be available well before the launching, but briefly it will carry a beacon transmitter in the 28 megacycle band, an eight-channel telemetry system operating on the 2-metre band, and a command receiver also operating in the 2-metre band, which will enable Amateurs around the world to test the command system which may be used in a translator satellite to be launched after the results of the first satellite have been analysed.

This project has great prestige value to Australian Amateurs, and every effort should be made to bring this project to successful fruition. If it is successful, and sufficient financial support obtained, the opportunity exists to arrange for the launching of a translator satellite in 1967.

All donations should be sent to the Federal Executive, P.O. Box 2611W, G.P.O., Melbourne.

V.H.F. NET FREQUENCIES

Many stations operating on net frequencies do not appear to know the requirements and procedures for net operating, if they do they appear to ignore them. The main "offences" that have been noticed are—

- (1) Hogging the channel.
- (2) Ignoring "break-in" stations and/or telling the break-in stations to stand by or asking the break-in station to use another channel.
- (3) Giving micro-second breaks between others.
- (4) Having rag-chews with over 10 to 15 minutes duration.
- (5) Not listening on the frequency prior to calling or testing.
- (6) Testing on a frequency whilst other stations are using the channel.
- (7) Using a mode of transmission or a net frequency such that the users of the net cannot copy but suffer severe interference.

Correct procedures are—

- (1) Listen on the frequency before testing or calling.
- (2) Keep overers short, not more than a couple of minutes each.
- (3) Give at least 3 seconds break between overers to allow break-in stations to identify themselves.
- (4) Acknowledge a break-in station and pass the net over to the break-in at the end of your over.
- (5) Accurately net your transmitter and receiver to the channel that you are using.
- (6) If you call CQ DX on a net frequency and make contact with a DX station tell the other station that you will QSY to X frequency and keep the net free for other operators.
- (7) On f.m. no dot overdeviates. The Institute standard is plus or minus 18 Kcs.

In VKX there are large number of nets in operation. Those in greatest use are: 32.528, 2 metre f.m.; 33.033, 2 metre a.m.; 145.554, 2 metre f.m.; channel A: 145.000, 2 metre f.m.; channel B: 145.145, 2 metre f.m.; channel C: 145.145, 2 metre f.m. For maximum efficiency the equipment you use should be accurately netted for receiving purposes the transmitter of VK3WT on 2 metre a.m. and 2 metre f.m. are sufficiently accurate.

For transmitter alignment it is recommended that you either net to the F.M.G. frequency measuring stations—in VK3, South Morang and St. Kilda Road mobiles only. Some stations in Melbourne are equipped to give frequency checks on 2 a.m. and 2 f.m. These stations will be announced in VK3WT broadcasts at regular intervals.

I hope this information will help some of the "offenders" to improve their equipment and operating procedures.

—Cyril Maude, VK3ZCK.

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W.I.A. FEDERAL CONVENTION—EASTER 1966

Some three weeks ago, over the Easter Holiday week-end, the Institute held its 30th Annual Convention in Brisbane.

In many ways it was the most successful Convention of recent times and should provide a criterion for those to be held in the future.

The majority of delegates arrived late on the Thursday evening and, after battling with the holiday exodus to the Sunshine State, were most grateful for the excellent accommodation provided.

There were over fifty agenda items (as well as items of general business) to be considered, so proceedings started early on Good Friday morning in the Board-room of the Brisbane Department of Electricity Supply.

outside the United States of America and when in orbit will serve to indicate that Australian Amateurs are as competent and progressive as any in the world.

If successful, "Australis" will be followed in early to mid-1967 by a more complex and powerful satellite.

By comparison with the exciting prospect of launching an Australian Satellite the remaining items on the agenda appeared somewhat mundane, but were nevertheless just as important to the Institute and its members.

Among the policies adopted by the Convention were two concerning Novice licensing, two concerning frequency allocations and one proposal dealing with frequency nomenclature.

their general meetings to get more information from their Federal Councillor.

A report such as this (written in some haste to catch the publication deadline) would not be complete without a sincere "thank you" to the Host State. Since the last Federal Convention was held in Brisbane in 1956 it is additionally pleasurable to record that all the arrangements for this year's meeting were of the highest order and delegates were unanimous in their praise of the superlative job done by David Portley and his team.

The next Federal Convention will be held in Hobart at Easter 1967 and it is to be hoped that it will be as successful as the one just concluded.



The W.I.A. Federal Convention. Left to right: David Portley, VK4DP (VK4 Federal Councillor); Pat Kelly, VK4KEB (VK4 Observer); Geoff Taylor, VK5TY (VK5 Federal Councillor); Roy Chamberlain, VK6RV (VK6 Federal Councillor); Ted Cruise, VK7EJ (VK7 Federal Councillor).

After a welcome by Federal President Max Hull, VK3ZS, and a reply by the Queensland delegate, David Portley, VK4DP, the minutes of the 1965 Melbourne Convention were adopted.

Undoubtedly the most complex of all the agenda items—that dealing with the proposal for Federation—was the first to be tackled and in the event went through the Friday afternoon and evening and was not completed until mid-Saturday morning. The tape transcript alone occupied four reels and will provide some headaches for those responsible for the production of the minutes.

The solid work sessions continued until midday on Easter Monday when the first of the delegates had to return to his home state. Some relief to the pressure of work was provided on Easter Sunday when an afternoon motor trip to the fabulous Gold Coast was arranged by the host Division.

Federation apart, by far the most significant thing to come out of the Convention was a decision by Federal Council to support—both financially and administratively—the launching of an Australian Amateur Satellite.

Whilst technical details of "Project Australis," as it will be known, are given elsewhere in these pages, this report on Convention proceedings seeks to emphasise that the action taken by Federal Council will be of great importance to the Institute.

"Australis" will be the first Amateur satellite designed, built and financed

Administrative matters reviewed included a uniform course of study for Amateur examinations, whilst a draft copy of a booklet designed for those newly interested in radio was presented for comment by Divisions. The format of the Institute Log Book and a proposed layout for the Call Book were also discussed.

On the international scene the subject of I.A.R.U. Region III was deliberated at length since it was felt that Australia should take the lead in attempting to bring Region III societies together.

Under regulatory matters delegates were advised of the present situation regarding the re-compilation of the "Handbook," and other similar matters discussed included the possible use of the 28/30 Mcz. band by L.A.O.C.P. holders, emergency networks and Advisory Committees.

The section of the agenda devoted to contests produced the usual spate of motions. Most of them dealt with suggestions for improvement of contests, especially with regard to time-keeping and scoring methods. These suggestions should find their way into contest rules in due course.

Until each State has ratified the actions of its Federal Councillor at the Brisbane Convention it will not be possible in these pages to report more fully on the detail of the various proposals. In the meantime interested members will have the opportunity at

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call No.	Cnt. rise	Call No.	Cnt. rise
VK3HM	34	VK3ZS	61
VK3AH	51	VK4ER	12
VK3RU	3	VK4DX	65
VK3AB	45	VK5TL	12
VK3MK	43	VK5AK	56
VK3PJ	21	VK6KW	4

New Members:

VK3HM	72	VK3HL	71
VK3AH	55		119

Amendments:

C.W.

Call No.	Cnt. rise	Call No.	Cnt. rise
VK3KE	19	VK3AH	71
VK3CK	28	VK3AQ	79
VK3QL	5	VK3EO	2
VK3AD	61	VK3RU	18
VK3PJ	39	VK3AK	56
VK3NC	19	VK3XB	76

New Members:

VK3HL	53	VK3KS	74
VK3HM	72		194

Amendments:

OPEN

Call No.	Cnt. rise	Call No.	Cnt. rise
VK3AD	58	VK3NC	77
VK3RU	8	VK3HR	7
VK3AH	63	VK3VN	15
VK3MK	74	VK3JA	43
VK3PJ	32	VK3TL	65
VK3AC	6	VK3AP	42

Amendments:

VK3HL	75	VK3HM	84
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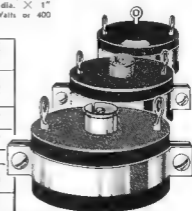
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351A	Impedance ratio 1:4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc/s. For use at centre of a folded dipole antenna with coaxial feed line or at base and with 300 ohm twin line connector and terminals as 350A.
352A/BC	Details as 350A except freq. range 500 Kc/s to 5 Mc/s, or to 30 Mc/s, for receiving purposes only with increased attenuation.
353B	This is a type 350 with a coaxial socket 50 239 (Amphenol screw type).
354B	Type 351 with 50 239 coaxial socket.
355C	Impedance ratio 2:1. 52 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc/s. For use at the base of a mobile whip antenna coupled to fixed or adjustable transmitter output impedance. Lug terminals.
356C	Impedance ratio 3:1. 78 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc/s. Lug terminals. Use as 355C.



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Transistor Interchangeability List

The 8th revised edition tabulates in excess of 2,350 transistor types in the first part of the publication while the latter features the "Broadcast Receiver Transistor Replacement Guide" (approximately 1,000 transistor listings). This section is compiled to provide service organisations with a ready reference of transistors in the Mullard range which are suitable replacements for Japanese and other imported transistors.

This 8th edition of the "Transistor Interchangeability List" is available from all Mullard Offices throughout the Commonwealth, priced at 25c, post free.



HINTS AND KINKS FEEDER SPACERS

Ever wanted a cheap and effective insulating spacer for open wire feeders or folded dipole antennae? Remove the braid and insulation from scrap lengths of UR57 or similar co-axial cable. Remove the inner conductor (this will need to be done in short lengths of no more than a foot, or it will be difficult to remove). Cut to the desired length, leaving about $\frac{1}{4}$ inch at each end, then drill holes at the required spacing of a size to make a firm fit over the wire. With a little ingenuity a jig can be made up for mass production.

The spacers are very effective up to a length of $\frac{3}{4}$ inches or so. They will work at greater spacing, but lack rigidity.

—A. R. F. Nickels, VK4AL.

SIDE BAND

(Continued from Page 12)

which very high r.f. voltages can occur at moderate power levels. Don't throw these big fellows away, as they are becoming collectors' items and can cost lots of dollars for new ones.

Now here is a note on the selection of the plate feed r.f. choke. I have seen transmitters operating quite satisfactorily with the small 4-pi, 2.5 millihenry chokes, but in other transmitters, even the expensive heavier duty low resistance jobs costing many dollars have lasted 10 or 15 seconds on some bands. I recommend the long solenoid type, wound on $\frac{1}{4}$ " or $\frac{1}{2}$ " dia. bakelite, or better still, ceramic tubing.

The loading capacitor may be a series of fixed mica capacitors, switched by the bandswitch, or a good large 3-gang tuning condenser with ceramic insulation.

Plate blocking condensers of the 2000 volt working variety, and about .002 microfarads are available in either the mica or hi-k ceramic type, my preference being for the mica one, having seen the others fail. Use the highest voltage rating you can buy.

Brass or copper strip connections in the r.f. circuits will pay off in reducing the inductance of the connections—which should not have it.

Plate parasitic suppressors are usually 5 to 10 turns of 18 g. wire wound on 1 watt, 47 ohm "Erie" resistors. These "Erie" composition-type resistors with white ceramic cases about $\frac{1}{2}$ " long and just under $\frac{1}{4}$ " dia. appear to outlast and out-perform the bakelite moulded ones in this service.

The last item for shopping is a 2 to 10 pF. neutralising condenser—ceramic insulation, adequate spacing between plates—suitable for mounting away from earthed metal and adjustment without danger to the operator, with an insulating extension or non-metallic tool.

Next month's notes will deal with the setting to work of the output stage of the exciter. Following that I hope to slip in a few notes on crystal filters before proceeding with notes on the larger linear amplifiers.

73, Phil VK3NN.

NEW CALL SIGNS

JANUARY AND FEBRUARY 1966

- VK1GP—G. P. Budd, Flat 12, Block "B," Curroon Plaza, Bradcon.
VK1KE—J. K. Westbrook, 9 Haines Street, Curroon.
VK1MO—J. K. Muthelland, Married Quarter 43, Middle Head Military Area, Mosman.
VK3OC—T. J. Casey, 54 Memorial Avenue, St. Just.
VK3QS—M. S. Stephenson, 4/12 Watson Street, Neutral Bay.
VK3TO—T. Olrog, 1/22 Somerset Street, Mosman.
VK3AZ—K. A. Maxwell, 36 Gillipoli Street, Lidcombe.
VK3AOB—V. P. Burman, 25 Woronora Parade, Jervis.
VK3AXG—Kinross High School Radio Club, High School, Wollstonecraft.
VK3AYO—H. B. Broad, 3/7 Bogota Road, Cremorne.
VK3AZQ—A. Havvett, 9/12 Hazelbank Road, Wollstonecraft.
VK3BRE—J. I. Rymand, Postal. C/o A.N.Z. Bank, corner Hunter and Pitt Streets, Sydney; Station: Portable throughout N.S.W., Qld. and Vic.

- VK1BDO—E. L. Andrews, Postal: P.O. Box 45, Goolburra; Station: 55 Annetts Parade, Mosby Point.
VK3BGF—G. Hunsaker, 25 Chatham Avenue, Taree.
VK3BGH—G. L. Hayes, 13 Victory Street, Clovelly.
VK3HLE—R. Fisher, Flat 23, 143 Kurraha Road, Neutral Bay.
VK3HOB—R. A. Hylth, 28 Park Street, Belmont North.
VK3ZBD—J. C. Rogers, 89 Barney Street, Arncliffe.
VK3ZDU—K. J. Duncanson, 21 Brighton Parade, Brighton-Sands.
VK3ZED—J. Wolfson, Postal: 60 Cair St., Cammeray; Station: North Sydney Technical College.
VK3ZFP—D. K. King, 14 Cambridge Avenue, Raymond Terrace.
VK3ZHT—H. E. Jones, 44 Kertill Avenue, Beecraft.
VK3TU—J. J. McConnell, 5 Flinders Street, Mitcham.
VK3XA—D. V. Hope, 19 Waimarie Drive, Mt. Waverley.
VK3JEN—J. P. T. Mantle, 1 Bannerman Street, Bendigo.
VK3JAC—D. D. Morgan, 12 Lynwood Avenue, East Ringwood.
VK3JAF—C. N. Swain, 29 Constance Crescent, Hawthorn.
VK3JAG—A. P. Harding, 18 Ellison Street, Ringwood.
VK3JAG—R. F. Gething, 388 Waterdale Road, West Heidelberg.
VK3JAM—J. C. Mayland, 5 Gayer Avenue, Wangaratta.
VK3ALN—A. S. W. Taylor, 65A Nelson Street, Waufray.
VK3ANZ—A. I. Yule, 74 Cumberland Road, Pascoe Vale.
VK3ASQ—R. E. Glew, 9 Dudley Avenue, Moorabbin.
VK3AKE—R. J. Callender, 383 Warrigal Road, Burwood.
VK3ZAC—R. L. Bennell, 28 Budge Street, Noble Park.
VK3ZIB—L. C. Barker, 808 Ryrie Street, Geelong.
VK3ZQD—K. J. O'Brien, 53 Summit Road, Frankston.
VK3ZQF—B. M. Thomas, Muddle Street, Yarra Junction.
VK3ZSB—R. Gray, 96 Atherton Road, Oakleigh.
VK3ZSN—M. S. Odell, 48 Kooyong Road, Caulfield.
VK3ZSN—R. Howard, Upper Glen Park Road, Eltham North.
VK3ZTO—J. T. Bayley, 9 Dominic Street, East Camberwell.
VK4VU—J. H. Dexter, 10 Alden Street, Southport.
VK4YJ—W. Jane, 18 Ross Street, North Ward Townsville.
VK4YX—W. W. Watson, 86 Bras Street, Rockhampton.
VK4ZQJ—G. J. Richardson, 17 Dagmar Street, Rockhampton.
VK4ZJO—J. Harvey, 28 Cambridge Street, Camp Hill.
VK5HF—J. Lehmann, "Glenburne," Mount Gambier.
VK5NM—N. A. Marrie, 11 Sussex Street, Hamilton.
VK5ST—K. A. Potter, 26 Gowie Avenue, Glen Gowie.
VK5ZCD—D. J. Cordes, 37 Sullivan Road, Elizabeth Park.
VK5ZFD—C. M. Deane, 9 Shearman Avenue, Oaklands Park.
VK5ZHC—T. Corbin, 12 Fuller Street, Walkerville.
VK5ZSW—R. H. Whellum, 48 Tyne Avenue, Kilburn.
VK5ZTF—T. L. Folds, 10 Trott Grove, Oaklands Park.
VK6R—J. D. Van Lear, Postal: Box 1270, Perth; Station: 53 Ednah Street, Como.
VK6ZCR—G. J. O. Coles, Postal: Box 76, P.O., Donnybrook, Station South West Highway, Donnybrook.
VK7ZGJ—J. E. Gelston, 144 King Street, Westbury.
VK7ZLN—R. L. Hibbert, 647 Huon Road, Fernvale.
VK7ZSD—H. M. McClelland, 103 King Street, Scottsdale.
VK7ZTF—R. D. Summers, 385 St. Leonard Road, St. Leonards.

AMATEUR FREQUENCIES:

ONLY THE STRONG GO ON—
SO SHOULD A LOT MORE
AMATEURS!



ROSS HULL MEMORIAL CONTEST 1965-66 RESULTS

The Federal Contest Committee takes pleasure in presenting the Results of the 1965/66 Ross Hull Memorial Contest.

This year's total number of entries, plus the low scores, is the lowest for a long time in Contest history. From the logs received it appears that band openings were very few, and not those anticipated. It was obvious that Channel "10" also restricted operating.

Of considerable interest was the openings to New Zealand, of the 2 metre band. These took place mainly during the period of 0700 hrs. to 1000 hrs. G.M.T., between ZL and VK2 and VK3. From remarks and comments from VK1VP, VK2ZFB, VK3ZDM, VK4ZLO, VK5ZP, VK6ZDX, VK6ZKV, VK5ZHF, and ZL3AAU it appears that all is not well with the Rules of the last Contest.

We would like to point out that they are what they are, because of changes recommended by members, and agenda items from conventions. However, while participants submit comments with their logs, every endeavour will be made to make use of them to form better rules.

Some comments on suggestions and criticisms are:-

(1) G.M.T. is Institute policy, and will be used in all further Contests unless it is revoked at Convention level.

(2) Calendar day must necessarily mean G.M.T. Calendar day. The next contest will start at 0001 hrs. G.M.T. to avoid confusion, and a calendar day from that time will be mentioned in the Rules.

(3) The 9-day period was generally accepted, although this received adverse criticism. I quote "being rather stupid, as it depends on band openings, and they were mighty poor in VK this year."

(4) The scoring system, with particular emphasis on the conditions of propagation of 432 and 144 Mcs. was noted, and also the high points mileage table needs reviewing.

It is anticipated that the Contest for 1966/67 will have advance publicity giving some rule changes. These should mainly be in connection with the period of the Contest, and the scoring table. It is proposed to increase the points for the 432 Mc. band and higher, to encourage more use of them.

This Contest is a Memorial to Ross Hull who saw future uses "of the world above 50 Mc." His work enabled others to find this world, and it is with this in mind that the Contest Committee would like to see a greater number of operators using the v.h.f./u.h.f. bands and entering the Contests.

—Neil Penfold, for F.C.C.

TROPHIE WINNER

	8-day	48-hour
VK3ZDM—R. J. Beames	period	period
	536	291

AWARD WINNERS

Section A—Transmitting Open	
VK5ZF—I. L. O'Donnell	41 18

Section B—Transmitting Phone	
VK1VP—E. Penikis	193 193
VK2ZFB—A. F. Birch	252 96
VK3ZDM—R. J. Beames	246 291
VK4ZLP—P. J. Lindsay	99 87
VK5ZKR—C. H. Hutchesson	413 39
VK6ZAL—I. G. Stinson	55 30
VK7ZAH—K. J. Hendricks	478 248
VK8ZMR—M. D'Arcy	
Richardson	10 10
ZL3AAD—G. E. Alderson	337 227

Section C—Receiving	
L3229—R. J. Halligan	275

TWO-DAY HIGHEST SCORING LOG	
VK7RL—R. V. Bulman	443 334

Other Entrants' Scores	
Section A—Nil	

Section B	
VK4ZRG—Townsville	66 32
VK4ZLO—Dorrington	45 27
VK5ZKV/S—S. Hummicks	183 142
VK6ZDX—Oaklands Park	85 87
VK5ZHI—Gawler Rail	83 27
VK5ZEJ—Forreston	81 32
VK5TN—Kings Park	20 10
VK6MM—Medlands	19 18
VK6ZAG—Tuart Hill	12 7
VK7ZAP—Hobart	202 114
VK7KS—Sandy Bay	8 8
ZL3AAU—Christchurch	221 127
ZL3RK—Christchurch	137 110

Section C	
L2074—Kingsgrove	70
L6028—Riverside	53
L5065—Croydon	45



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Epoxy glass circuits (in) 100 per sq. in.		\$
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STATE..... OCCUPATION.....



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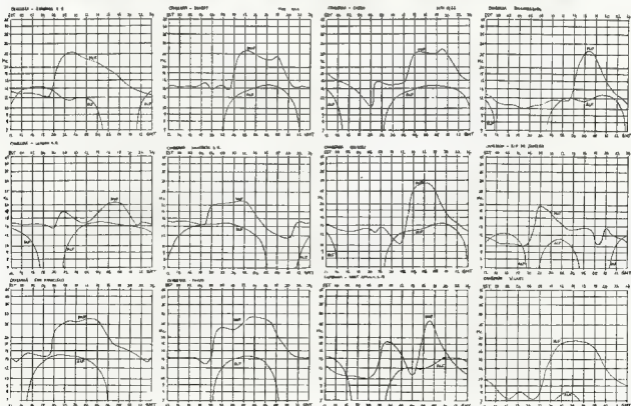


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1D4	75c	5Z3	\$1.75	8G8G	\$2.50	7N7	50c	955	50c
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1M5	80c	6AM5	\$1.00	8F7	75c	12SATGT	\$1.00	6021	\$1.00
1P5	50c	6AM8	\$1.00	8S5	75c	12SC7	50c	9004	40c
1Q5	50c	6ANTA	\$1.00	8SA7	75c	12SG7	75c	EA30	40c
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1S1	\$1.75	6AS7GT	\$2.00	68F5	75c	12SNT	75c	EC313	\$2.00
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1U4	\$1.50	6AV6	\$1.40	68U7	\$1.25	12SRT	\$1.70	EY81	\$1.00
1U5	\$1.80	6B6	75c	68K7GT	\$2.50	12LA8	\$2.10	KT65	\$3.00
2A5	75c	6B8A	\$1.00	68L7GT	\$1.35	25L8	\$1.00	QV803/12	\$4.75
2A7	75c	6B82	\$1.50	68M7GT	\$1.00	25Z8	\$1.00	QV804/7	\$2.50
2D21	\$1.50	6B1A	\$1.80	68Q7GT	\$2.50	38LACT	\$1.00	RL18	75c
2E8	\$2.50	6B1B	\$1.85	68S7	75c	19	50c	UL41	\$1.00
2X3	50c	6B28	\$1.70	6U3	\$1.85	30	50c	VR802	50c
2A4	\$2.50	6B25	\$1.45	6U7	75c	47	50c	VR125	50c
2A5	\$1.00	6B28	\$1.45	6U8	\$1.70	57	50c	VR136	50c
2B5	\$1.00	6B27	\$1.45	6V4	\$1.14	50	50c	VR137	50c
2C5	\$1.00	6B28	\$1.45	6V5GT	\$1.70	80	\$1.70	VR159	\$1.85
2V4	\$1.80	6C8	50c	6X4	\$1.00	71TA	75c	VT78 (8D6)	50c
6AR4	\$1.85	6C8	\$1.00	6X5	\$1.45	807	\$3.75	VT137	50c
6A54	\$1.45	6C7	\$1.85	7A8	40c	808	\$1.00	VT381	75c
6R4GY	\$3.75	6CH8	\$2.35	7C5	50c	809	\$2.00	VU38A	50c

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL QSL BUREAU

Scores of cards were returned in early April by the J.A.R.L. No reason was stated and by the J.A.R.L. no endorsement appears on any of the returned QSL's.

The QSL manager for VK0ML, Colin Lebborn, currently vice active from Macquarie Island, is Greg Johnston, 2AGL Street, Newtown, Hobart, Tas. Colin, who some time back held a QMG call, left a few hundred blank with Greg. At the present rate of QSL they will not last very long.

The R.S.G.B. QSL Bureau advises that the Bureau will be closed from May 3 to May 23 inclusive and requests no cards to arrive during that period.

Frank Pfeiffer, K6JIC, writes as of March 18: "For the next two years I am the QSL manager for KKKIK/KGE on Guam Island. In addition to the Guam Is. activity I will also be the QSL manager for any of his DX-pedition advertising."

KKKIK is Cliff G. Moore, U.S.N., presently attached to the U.S. Naval Security Group on Guam. DX-er and contest man for some ten years now and presently 318/218 for DXCC. Cliff will be active 80 through 14, and is hoping for some DX operation.

The normal DX QSL procedure is desired, and that being done, time in Q.M.T. and S.A.S.E. or S.A.E. and I.R.C.'s for direct replies.

Info is required as to the Australian QTH of Joe V6RJB it is stated by V6RMC that Joe has now returned to Australia.

—Ray E. Jones, VK3RJ, Manager.

NEW SOUTH WALES

There was a large attendance at the VK2 Divisional annual meeting at the Wireless Institute Centre, Crow's Nest, on 28th March; visitors were welcomed by the Chairman (Ivan 2A1M), among these being David 2JY, the new Divisional Executive. The annual report, which had previously been circulated, was taken as read and adopted after complimentary remarks to its content and contents.

This year there was more than usual interest in the election of Council, with a ballot for the first time. Eight nominations were received for seven positions, and the voting resulted in the following being elected: Peter 2A1X, Kevin 2ANY, Herb Grouse 2A0R, Bill 2JY, Maurice 2IVY, Tom 2OD, and Charlie 2A1E.

The Chairman announced that the Auditor's report and balance sheet could not be presented at that meeting as there had been a last-minute hold-up in some of the figures required. These would be available at the April meeting, to which the annual meeting was then adjourned.

The March general meeting followed the main feature being a programme of films arranged by the Education Officer, Harold 2A4H, assisted by Phil 2EPL. In addition to two short films dealing with mobile and portable work, and a class at Murrumbidgee, a most interesting film, in colour, dealt with the production and uses of electricity.

The Chairman transferred to the death since last meeting of Frank Pearson, 2ACQ, who was well known as the Morse practice supervisor. A one minute's silence was observed by the meeting.

Frank's work is being carried on by Ern 2EPL, who is the Morse practice supervisor, and Doug 2AUC is now in charge of the nightly Morse practice sessions. The latter will be assisted by Jim 2AKE when necessary.

At the conclusion of the March meeting the newly-elected Council, met for a few minutes and elected Tom 2OD to the position of Divisional Secretary. After his election and a morning broadcast to members he received congratulations from all parts of the State on his elevation to the chair.

The new Council's first business meeting took place on last April, with a fairly late sitting. At the conclusion of the meeting, 2A1M, the retiring President, attended the meeting and assisted with the handing over of various matters that had been dealt with during the closing stages in the life of the previous Council.

The election of office-bearers for the ensuing twelve months resulted as follows:

President and Chairman of Council, T. M. O'Donnell, 2OD.

Senior Vice-President, W. J. Lewis, 2YH.

Junior Vice-President, C. J. Wilkins, 2A1E.

Secretary-Treasurer, Mrs. E. Gordon, Assoc. Circulation Manager and Registrar, W. Johnston, Assoc.

Minute Secretary, R. M. Marsden, 2IVY.

Education Officer, H. B. Burfoot, 2A4H.

Supervisor, Y.R.S. E. C. Black, 2YH.

A.O.C. Supervisor, C. E. Harwell, 2IR.

Bulletin Editor, A. C. Sabin, 2A2G; W. Johnston, Assoc.

Hon. Solicitor, W. Clark, Assoc.

DX Officer, E. E. Molen, 2SG; C. E. Whitling, 2ACD.

Morse Table Service, E. P. Hodgkin, 2HET.

Morse Practice Supervisor, D. G. Courtney, 2AUC.

Disposals Committee: L. W. Squires, 2SD; W. Kohn, Assoc.; S. Kuhl, 2ZSK; T. J. Mills, 2ZTH.

W.I.C.E.N. Supervisor, V. L. Coles, 2VL.

O.C. Dural, D. H. Duff, 2EO.

Group Officer (General), L. H. Cartwright, 2ZJC.

Librarian, K. de Haan, 2UE.

Zone Correspondent, I. M. Agar, 2ADM.

Other appointments will be made later.

In his initial welcome to the incoming Councilors, the President especially mentioned the presence of Mrs. Hebe Grouse, 2A0R, and said that so far as he knew, this was the first time in the history of the W.I.A. that a member of the fair sex had been a member of a Divisional Council, and he hoped she would remain on the W.I.A. Council for a long time.

The VK2 S.W.I. Group's annual meeting was held during the month of March. The Federal Councilor, Pierce 2APQ, was invited to take the chair and the following office-bearers were elected: Pres., Gordon Cruick, Vice-Pres., Ross Irwin, Liaison Officer, Ross Irwin, Sec.-Treas., Chris Middleton-Williams, Publicity and QSL Officer, Chris Abernethy. When these notes were being written the S.W.I. Group was endeavouring to whip up interest in what should be a very interesting tour of inspection to the O.T.C. Receiving Station at Brindley on 23rd April.

The V.H.I. and T.V. Group held its annual meeting on 24th April, where there was an excellent attendance. Stephen 2ZSK was elected as Group Chairman and other appointments resulted. Amongst these were: Sec., I. McKenzie; Committee: 2ZIM, 2ZPC, 2ZDD, I. McKenzie was appointed W.I.C.E.N. Officer and P. Carter and C. Jones comprise the Contest Committee.

We regret that we have to report a tragedy that has occurred in the family of one of our well known members and Vice-President of Council, Roy 2EO. On the evening of 28th March their 17-year-old son, Peter, was struck by a car while walking along the road near his home and died of his injuries. We join with their many friends in extending sincere sympathy to the bereaved family.

Muriel 2A1A, one of our better known DX chasers, has made a good recovery following a recent operation. At the moment she is a patient at a Sydney convalescent home, but it should not be long before she is on her feet again.

Rosal Thomas, 2E8AU, who has frequented the 14 Inch band many times, was known to his wife, Georgette, at Kingsford Smith Airport on 2nd April, en route for France on four months' long service leave. When they were over an hour and a half at the airport, they were met by Bill 2A6F and his wife and daughter, and Ivan 2A1M and his wife. Their jet aircraft took off at 4 a.m. and was expected in Singapore that night. Truly the world is shrinking! 73, 2A1M.

CENTRAL COAST BRANCH

The last meeting of the Central Coast Branch of the W.I.A. was held on March 18 and had a larger attendance than usual, which was very

gratifying as this was the annual meeting and there were a few jobs to be filled. There were several new faces from as far away as Vale Point and Mangrove Mountain and we hope this trend continues.

The new officers are as follows: Pres., Lind 2BOM; Vice-Pres., Ern 2EEL, Sec., Frank 2APF; Treas., Phil 2TC; Publicity Officer, Moss 2A5; Public Relations, Gordon Proctor. The retiring Pres., Ern Hodgkin, gave a report on the activities for the year which included several interesting visits to places like O.T.C. at Brindley, A.W.V., etc., some social events, and of course the Field Day which was the highlight of the year. We are still hearing nice things said about the Field Day.

One minute of silence was observed for Frank Pearson, 2ACQ, who died suddenly on March 3 at his home at Woy Woy, 73, Moss 2A5X.

VK2 DIVISION

NEW AND SURPLUS EQUIPMENT

The VK2 Division of the W.I.A. operates a store for the benefit of members. We would again like to bring to the notice of members of other Divisions that its facilities are also available to you. A comprehensive catalogue may be obtained by writing to: Disposal Section, Wireless Institute Centre, 14 Atchison St., Crow's Nest, N.S.W. Mail order inquiries are welcomed or your personal visit when we are open on meeting nights and on the 2nd and 4th Saturday afternoons of each month.

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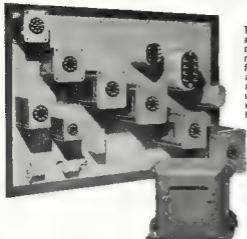
TELETYPE EQUIPMENT

A range of surplus R.T.T.Y. equipment was recently obtained. It included keyboard page printers, keyboard reperforators, tape transmitters, etc. If you are looking for R.T.T.Y. items, try us, we may have it.

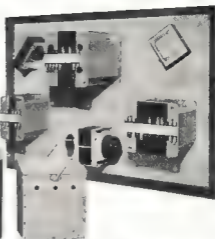
NEW EQUIPMENT

Building something? We have quite a range of new parts for that project, including meters, transistors, 2-metre beams, tools, test equipment, capacitors, transformers, coil formers, plugs, sockets, knobs, dials and many others. All these are listed in an illustrated catalogue available free by writing to Disposal Section, Wireless Institute Centre, 14 Atchison St., Crow's Nest, N.S.W.

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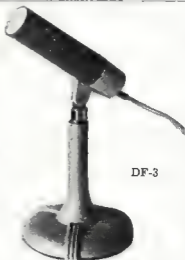
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Not much from ECL Ian lately. Must be too busy at the new QTH taming the big eagles and mudwings. You had better find time to get the rig going mate. We sure miss your humour, old buddy.

A new call sign at 6AF, sorry, did not get the handle. Welcome back to VK8 land. Don SBR working Jim 8RU on 80 mhz, solid signals both ways. Lionel GLM with 8 watts working EBE. Bob being very active on 15 lately also.

Well, that's it, chaps. 75, Bob AKN.

TASMANIA

Let me start this month by welcoming the new members to your country. These worthy gentlemen being Ted TKJ, who has been our Federal Councillor for some years now; John TZJQ, who works at our local commercial t.v. station; and Crosby TCR, who is employed in the P.M.G. Dept. (don't ask me what branch), but wherever they work, they will, along with the rest of the Council, be working for you and the Division and the Institute as a whole for at least the next year, and with any luck at all, much longer. The new Federal Constitution, being the biggest thing of course, and the year culminating in next Easter when the members will convene will be listed in the Division to the rest of Australia for the Federal Convention of 1981, so not only your Council, but every single one of us will have a big job to do.

Our annual general meeting was attended by over 40 members this year. It was disappointing, however, that more members from the other Zones could not be present. They certainly missed a first class dinner and evening after the meeting where over 60 OMs, XYLs, and YLs thoroughly enjoyed themselves. Quite a few seldom-seen faces showed themselves at the home of our President, Tom 7AL, on the Sunday morning after the dinner, when we held a monster disposal sale, and when we closed shop at 11 noon most of the monster was gone, and the club room fund was \$500 plus better off. This fund is now getting to the stage where we can start thinking about our club rooms. When we first started our fund,

so slowly it grew, but now it grows faster, and so this is another thing which we will be surviving for this coming year—our club rooms.

Incidentally, I suppose I'd better mention your full Council for 1981. Tom 7AL as President again, Terry TCR as Treasurer and Vice-President, Crosby TCR is Secretary, Ian TZJQ Vice-President, with Ted TKJ, John TZJG and myself making up the seven.

Tom 7AL has had his "thing" (to use SPS term for it) on the air, and if it's possible, has a 15 s.s.b. side. He says he'll be even better when he re-builds the power supply, and gets it going on full power.

This year's Athol Johnson Memorial Contest was won by the one and only Ian TZJQ, a mere 70 points. It was a very poor contest this year, but then quite a lot of would-be contestants were busy with other things. I knew, still we must congratulate Ian, not only for winning, but also for being the only one to submit a log, so with chance here it's best time for me. One last thing, if you have not paid your sub., then it is high time you had! 75, Geoff TZAS.

NORTHERN ZONE

The annual general meeting held on 11th March presented us with a new office-bearer: Peter TPF as President, Peter TZPD as Secretary-Treasurer, Frank TZFR as Zone C.A. accountant, and Col TGF as G.M. I am sure all our good wishes go to these members and many thanks to the retiring members.

A V. project has been started. I believe TZBW has the job of the tx, TZPD the power supply, and TZLK the sync. pulse generator.

So to it and the tale of the tape. Bevan TZBW is at present touring the East Coast of the big island, mobile 6 and 2 mhz of course—VK3, VK3 and VK4 all included. No doubt there will be some good photographs of gear, some of it well stacked to the right proportions, as well as the more entrancing scenery that he will be taking, and with plenty of good news to grace our humble ears with.

Don TZK went in April to VK3, VK3 and VK4 with that little muscovy of his. He tied up with old friends and worked a few more countries, making his base in VK3. Joe TZGJ has gone and accepted a position in VK3 at Wellington. Don't worry Joe, there's plenty of us left to look after Loraine, and I am sure that I speak for all when I say the best in everything in your new adventure. Frank TZFR has gone and had himself half spliced; there's another apron string. Congratulations to you both.

The Hobbies Exhibition was held on 2nd April and a very local interest in operating the spare equipment. Thanks are given to TBR, TPF, TZJ, TZLD, TZRF and TZPD for providing such an interesting display under the circumstances.

The north versus north-west picnic was enjoyed by all who attended. I am sure that the 6 mhz net has never seen such activity in the north and it lasted all day. Mike TZMW provided a base. The usual game of cricket ensued, and the Northern Zone won the honours of the day, even with a score of side out for 18 runs. The coveted trophy was presented to TPF by the winning side at the ceremony. Thanks to the organisers of the North-Western Zone.

See you at next meeting at 2000 hours at the Adult Education Centre, St York St, and remember subs. are now due. 75, Frank TZFR.

HAMADS

Minimum 5/-, for thirty words.
Extra words, 2d. each.

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COLLINS 32S-1, s.s.b., tx, in mint condition. Has a.l.c., vox and works DX when the going is tough, £300. Box 36, Queen Victoria Bldgs., N.S.W.

FOR QUICK SALE: KW2000 s.s.b. Transceiver with a.c. p.s.u. and Shure 201 ceramic mike, as new, £300 (\$600), O.N.O. VK5XP, 5 Haldane St, Elizabeth Downs, S.A.

FOR SALE: American National NC400 Communications Receiver, 540 Kc. to 30 Mc., in 7 bands, separate bandspread scales on Amateur bands, 2 r.f., dual conversion, 3 i.f. stages, a.m., c.w., selectable s.s.b. reception, variable selectivity filters. VK3US, R. Clarkson, 26 Stewart St., Brunswick, Vic. 38-8929, mornings or week-ends.

FOR SALE: Hammarlund HQ-150 xtal filter, 100 Kc. calibrator, Q multiplier, matching speaker, instruction book, one owner, \$225. Heathkit DX-100, instruction book, assembled by owner, \$195. Hy-Gain 3 elm 10 mtr. beam, Gamma match, instruction book, \$20. Two R. L. Drake T.V. high-pass filters, \$8 each. Regency transistor converter, model ATC-1, 60 through 10 mtr., \$75. Repl. W. Rogers 44 S. Brunner Crescent, Goonellabah, N.S.W.

FOR SALE: Heathkit RA-1 Ham-Band Receiver, 1.7 to 30 Mcs, u.s.b., l.s.b., c.w. crystal filter, inbuilt crystal calibrator, matching speaker, factory assembled, spare set valves, manual and avometer, all mint, £75. Pope, 17 Goode St., Dubbo, N.S.W. Phone 5657.

FOR SALE: Selsyns, 3 in. Magisil Mk. 4, 50v., 50 cycles, £23 pair. A.W.A. crystal filter, full double lattice (8 crystals), frequency 100 Kc. approx., complete in case, £10. VK2ZAZ, J. W. Carr, 5 McKay Street, Nowra, N.S.W.

FOR SALE: Swan Tri-Bander, 80-40-20 mhz, 240w. p.e.p., complete with a.c. power supply and mike, like-new condition, £140. VK3NZ, 32 William St., Box Hill, E.11, Vic.

SELL: Geloze TX-22 in excellent condition, £59. Am going sideband. Write first to VK3AXE, 383 Warrigall Rd., Burwood, Vic.

SELL: 5" U.S. Navy-type Panoramic Adaptor, 30 Mcs., 1f., \$90 (£45). 8" Jap. midget T.V., 1100v., a.c., d.c., or 240v. a.c., spare valves, circuit, \$180 (£80). Both new. Will exchange both for Tri-Band Swan or similar. VK3RS, 46 Mayston St., E. Hawthorn, Vic. 82-1047.

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WANTED: AR7 Communications Receiver, good mechanical condition, complete with all coil boxes, but power supply or speaker not essential. VK2AHI, R. Martin, Box 143, P.O., Casino, N.S.W.

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San Electronics QTR7. Tx: 6BQ5 p.a., 6BQ5 modulator, xtal locked. Rx: Tunes 3.5 to 11 Mc., 1 watt audio output, 230v. a.c., \$90.

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Pulse Service: 120w. input, 30kw. output, duty cycle 1%, freq. range 960-1230 Mc. **C.w. Service:** 50w. input approx., 300w. output approx. Ideal tube for 1296 Mc. band. \$20 plus freight.

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New shipment. 600 v.w. Values: 0.001, 0.02, 0.005, 0.0005, 0.0002, 0.0001 uF. \$2 for 80 plus freight.

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SUPERVISING TECHNICIAN:

Mawson (1) Wilkes (1)

Salary including allowances* per annum: Married man: \$5600 (£2800)
Single man: \$5350 (£2675)

Duties: Install and maintain HP transmitters up to 5 KW output, HP communication receivers, portable field equipment, ground seradio communications and navigation equipment, radio telephone systems and fixed antenna systems and telephone lines and instruments.

Qualifications: Qualified Senior Radio Technician. Wide experience in the maintenance or installation and testing of radio communications transmitters and receivers and radio navigation equipment.

TECHNICIAN (RADIO):

Mawson (1) Wilkes (1)

Salary including allowances* Married man: \$3764-4192 (£1882-2096)
per annum: Single man: \$3514-3942 (£1757-1971)

Duties: Install and maintain radio and communications equipment under supervision.

Qualifications: Radio tradesman with experience in the maintenance and installation of HP radio communications transmitters, receivers and associated equipment.

RADIO SUPERVISOR:

Macquarie Island (1)

Salary including allowances* Married man: \$4426-4662 (£2213-2331)
per annum: Single man: \$4176-4412 (£2088-2206)

Duties: Install and maintain radio transmitting and receiving equipment, and act as Senior Radio Telegraphist.

Qualifications: Applicants should state any appropriate licence or technical diploma held by them. A thorough knowledge of theoretical and practical electronics plus a First Class Commercial Operators Certificate of Proficiency or equivalent service experience.

RADIO OFFICER:

Mawson (4) Wilkes (4) Macquarie Island (2)

Salary including allowances* Married man: \$3920-4388 (£1960-2194)
per annum: Single man: \$3670-4138 (£1835-2069)

Duties: Radio Telegraphist.

Qualifications: Commercial Operators Certificate of Proficiency or equivalent service experience, together with experience in operation and maintenance of ground installations.

SENIOR OBSERVER (RADIO):

Mawson (1) Wilkes (1) Macquarie Island (1)

Salary including allowances* Married man: \$4662-4896 (£2331-2448)
per annum: Single man: \$4412-4646 (£2206-2323)

Duties: Take meteorological observations and operate and maintain meteorological electronic equipment. The successful applicant for Mawson will be required to install three centimetre wind finding radar equipment.

Qualifications: Applicants must have educational qualifications to Intermediate Certificate standard and be trained as Radio Technicians. Experience in microwave radar, related experience in pulse techniques and auto follow systems an advantage.

Training: Successful applicants will be trained at a course in Melbourne commencing on 18th July, 1968.

★ ★ ★ ★

Please note that all salaries quoted include allowances. These allowances are payable only whilst serving in Antarctica. Salary whilst on duty in Australia may be calculated by deducting allowances, e.g. a married man receiving \$3794 (£1897) whilst absent from Australia would receive salary of \$2286 (£1143) whilst in Australia, i.e. \$3794 (£1897) less \$858 (£429) (37½% of salary) less \$650 (£325) (district allowance). A single man would receive \$250 (£125) less than the married man because of variation in district allowance payable.

Applicants must be in robust health. Ice or snow experience not required but history of outdoor activities is desirable.

Applications, which must be accompanied by a recent photograph and the names of at least three referees, should be lodged with the undermentioned addressee:—

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